

Title (en)

Targeting ABCB5 for cancer therapy

Title (de)

Anzielen von ABCB5 zur Krebstherapie

Title (fr)

Ciblage d'ABCB5 pour la thérapie du cancer

Publication

EP 2644205 A1 20131002 (EN)

Application

EP 13163810 A 20080411

Priority

- US 92312807 P 20070412
- US 705907 P 20071211
- EP 08742787 A 20080411

Abstract (en)

The invention relates to methods for treating a subject by manipulating ABCB5 on a cell as well as related products. The methods include methods of treating cancer using ABCB5 binding molecules such as antibodies and fragments thereof.

IPC 8 full level

A61K 39/395 (2006.01); **C07K 16/18** (2006.01)

CPC (source: EP US)

A61K 31/713 (2013.01 - EP US); **A61K 38/47** (2013.01 - EP US); **A61K 47/6851** (2017.07 - EP US); **A61P 17/00** (2017.12 - EP); **A61P 35/00** (2017.12 - EP); **A61P 43/00** (2017.12 - EP); **C07K 16/18** (2013.01 - US); **C07K 16/28** (2013.01 - EP); **C12N 15/1135** (2013.01 - US); **G01N 33/574** (2013.01 - EP); **G01N 33/57492** (2013.01 - US); **A61K 2039/505** (2013.01 - EP US); **C07K 2317/56** (2013.01 - EP US); **C07K 2317/565** (2013.01 - EP US); **C07K 2317/732** (2013.01 - EP US); **C07K 2317/734** (2013.01 - EP US); **C12N 2310/14** (2013.01 - US); **C12N 2310/3513** (2013.01 - US); **C12N 2320/32** (2013.01 - US); **C12Y 302/02022** (2013.01 - EP US); **G01N 2333/705** (2013.01 - US)

Citation (applicant)

- US 4816567 A 19890328 - CABILLY SHMUEL [US], et al
- WO 9951642 A1 19991014 - GENENTECH INC [US]
- US 5648260 A 19970715 - WINTER GREGORY PAUL [GB], et al
- US 5624821 A 19970429 - WINTER GREGORY P [GB], et al
- WO 9429351 A2 19941222 - CELLTECH LTD [GB], et al
- US 4946778 A 19900807 - LADNER ROBERT C [US], et al
- US 4462334 A 19840731 - KIM HO K [US]
- US 4355023 A 19821019 - EHRLICH PAUL H, et al
- US 4470925 A 19840911 - AUDITORE-HARGREAVES KAREN [US]
- EP 0239400 A2 19870930 - WINTER GREGORY PAUL
- US 5591669 A 19970107 - KRIMPENFORT PAULUS J A [NL], et al
- US 5589369 A 19961231 - SEIDMAN JONATHAN G [US], et al
- US 5545807 A 19960813 - SURANI AZIM M [GB], et al
- US 5565332 A 19961015 - HOOGENBOOM HENDRICUS R J M [GB], et al
- US 5573905 A 19961112 - LERNER RICHARD [US], et al
- US 5567610 A 19961022 - BORREBAECK CARL [SE], et al
- US 5229275 A 19930720 - GOROFF DIANA K [US]
- US 565354 A 18960804
- US 5571893 A 19961105 - BAKER JOFFRE [US], et al
- EP 0404097 A2 19901227 - BEHRINGWERKE AG [DE]
- WO 9311161 A1 19930610 - ENZON INC [US]
- WO 9308829 A1 19930513 - UNIV CALIFORNIA [US]
- US 5712171 A 19980127 - ZAMBIAS ROBERT [US], et al
- WO 9518972 A1 19950713 - ARQULE INC [US]
- WO 9622529 A1 19960725 - ARQULE INC [US]
- US 5053394 A 19911001 - ELLESTAD GEORGE A [US], et al
- US 5770710 A 19980623 - MCGAHREN WILLIAM JAMES [US], et al
- US 5877296 A 19990302 - HAMANN PHILIP ROSS [US], et al
- WO 9411026 A2 19940526 - IDEC PHARMA CORP [US]
- US 5208020 A 19930504 - CHARI RAVI J [US], et al
- US 4767704 A 19880830 - CLEVELAND WILLIAM L [US], et al
- US 4657866 A 19870414 - KUMAR SUDHIR [US]
- US 4927762 A 19900522 - DARFLER FREDERICK J [US]
- US 4560655 A 19851224 - BAKER PAUL E [US]
- US 5122469 A 19920616 - MATHER JENNIE P [US], et al
- WO 9003430 A1 19900405 - CETUS CORP [US]
- WO 8700195 A1 19870115 - CELLTECH LTD [GB]
- US RE30985 E 19820629
- US 2002086356 A1 20020704 - TUSCHL THOMAS [DE], et al
- US 2003206884 A1 20031106 - BARROW DERMOT CHRISTOPHER JOHN [GB]
- US 6846883 B2 20050125 - FRANK MARKUS H [US], et al
- US 5211657 A 19930518 - YAMADA YOSHIHIKO [US], et al
- WO 9524929 A2 19950921 - UNIV BROWN RES FOUND [US]
- US 5075109 A 19911224 - TICE THOMAS R [US], et al
- US 4452775 A 19840605 - KENT JOHN S [US]
- US 4675189 A 19870623 - KENT JOHN S [US], et al
- US 5736152 A 19980407 - DUNN RICHARD L [US]
- US 3854480 A 19741217 - ZAFFARONI A

- US 5133974 A 19920728 - PARADISSIS GEORGE N [US], et al
- US 5407686 A 19950418 - PATEL SATISHCHANDRA P [US], et al
- FRANK, N. Y. ET AL.: "ABCB5-mediated doxorubicin transport and chemoresistance in human malignant melanoma", *CANCER RES*, vol. 65, 2005, pages 4320 - 33, XP002456050, DOI: doi:10.1158/0008-5472.CAN-04-3327
- FRANK, N. Y. ET AL.: "Regulation of progenitor cell fusion by ABCB5 P-glycoprotein, a novel human ATP-binding cassette transporter", *J BIOL CHEM*, vol. 278, 2003, pages 47156 - 65, XP002496926, DOI: doi:10.1074/jbc.M308700200
- SEE KABAT ET AL., *NIH PUBL*, vol. I, no. 91-324, 1991, pages 647 - 669
- KABAT ET AL.: "Sequences of Proteins of Immunological Interest, 5th Ed.", 1991, NATIONAL INSTITUTE OF HEALTH
- MORIMOTO ET AL., *JOURNAL OF BIOCHEMICAL AND BIOPHYSICAL METHODS*, vol. 24, 1992, pages 107 - 117
- BRENNAN ET AL., *SCIENCE*, vol. 229, 1985, pages 81
- CARTER ET AL., *BIO/TECHNOLOGY*, vol. 10, 1992, pages 163 - 167
- JANEWAY ET AL.: "Immuno Biology: the immune system in health and disease", 1999, ELSEVIER SCIENCE LTD.
- COLOMA ET AL.: "Novel vectors for the expression of antibody molecules using variable regions generated by polymerase chain reaction", *J IMMUNOL METHODS*, vol. 152, no. 1, 31 July 1992 (1992-07-31), pages 89 - 104, XP023657543, DOI: doi:10.1016/0022-1759(92)90092-8
- GUTTIERI ET AL.: "Cassette vectors for conversion of Fab fragments into full-length human IgG1 monoclonal antibodies by expression in stably transformed insect cells", *HYBRID HYBRIDOMICS*, vol. 22, no. 3, June 2003 (2003-06-01), pages 135 - 45, XP009083949, DOI: doi:10.1089/15368590322286548
- MCLEAN ET AL.: "Human and murine immunoglobulin expression vector cassettes", *MOL IMMUNOL*, vol. 37, no. 14, October 2000 (2000-10-01), pages 837 - 45, XP002562175, DOI: doi:10.1016/S0161-5890(00)00101-2
- WALLS ET AL.: "Vectors for the expression of PCR-amplified immunoglobulin variable domains with human constant regions", *NUCLEIC ACIDS RES.*, vol. 21, no. 12, 25 June 1993 (1993-06-25), pages 2921 - 9
- NORDERHAUG ET AL.: "Versatile vectors for transient and stable expression of recombinant antibody molecules in mammalian cells", *J IMMUNOL METHODS*, vol. 204, no. 1, 12 May 1997 (1997-05-12), pages 77 - 87, XP004107719, DOI: doi:10.1016/S0022-1759(97)00034-3
- KOHLER ET AL., *NATURE*, vol. 256, 1975, pages 495
- GODING: "Monoclonal Antibodies: Principles and Practice", 1986, ACADEMIC PRESS, pages: 59 - 103
- KOZBOR, J. *IMMUNOL.*, vol. 133, 1984, pages 3001
- BRODEUR ET AL.: "Monoclonal Antibody Production Techniques and Applications", 1987, MARCEL DEKKER, INC., pages: 51 - 63
- MUNSON ET AL., *ANAL. BIOCHEM.*, vol. 107, 1980, pages 220
- SKERRA ET AL., *CURR. OPINION IN IMMUNOL.*, vol. 5, 1993, pages 256 - 262
- PLUCKTHUN, *IMMUNOL. REV.*, vol. 130, 1992, pages 151 - 188
- MCCAFFERTY ET AL., *NATURE*, vol. 348, 1990, pages 552 - 554
- CLACKSON ET AL., *NATURE*, vol. 352, 1991, pages 624 - 628
- MARKS ET AL., *J. MOL. BIOL.*, vol. 222, 1991, pages 581 - 597
- MARKS ET AL., *BIO/TECHNOLOGY*, vol. 10, 1992, pages 779 - 783
- WATERHOUSE ET AL., *NUC. ACIDS. RES.*, vol. 21, 1993, pages 2265 - 2266
- CLARK, W.R.: "The Experimental Foundations of Modern Immunology", 1986, WILEY & SONS, INC.
- ROITT, I.: "Essential Immunology, 7th Ed.", 1991, BLACKWELL SCIENTIFIC PUBLICATIONS
- PIER GB, LYCZAK JB, WETZLER LM.: "Immunology, Infection and Immunity", 2004, AMERICAN SOCIETY FOR MICROBIOLOGY PRESS
- KLEIN: "Immunology", 1982, JOHN WILEY
- CLARK, W.R.: "The Experimental Foundations of modern Immunology", 1986, WILEY & SONS, INC.
- ROITT, I.: "Essential Immunology, 7th Ed.", 1991, BLACKWELL SCIENTIFIC PUBLICATIONS
- CUNNINGHAM; WELLS, *SCIENCE*, vol. 244, 1989, pages 1081 - 1085
- A. L. LEHNINGER: "Biochemistry", 1975, WORTH PUBLISHERS, pages: 73 - 75
- DUNCAN; WINTER, *NATURE*, vol. 322, 1988, pages 738 - 40
- KUNKEL, *PROC. NAT. ACAD. SCI. U.S.A.*, vol. 82, 1985, pages 488 - 492
- WAHL ET AL., *J NUCL. MED.*, vol. 24, 1983, pages 316 - 325
- WARD ET AL., *NATURE*, vol. 341, 1989, pages 644 - 646
- TIJSSEN: "Practice and Theory of Enzyme Immunoassays", 1985, ELSEVIER
- HOCHMAN ET AL., *BIOCHEMISTRY*, vol. 12, 1973, pages 1130
- SHARON ET AL., *BIOCHEMISTRY*, vol. 15, 1976, pages 1591
- JONES ET AL., *NATURE*, vol. 321, 1986, pages 522 - 525
- RIECHMANN ET AL., *NATURE*, vol. 332, 1988, pages 323 - 329
- PRESTA, *CURR. OP. STRUCT. BIOT.*, vol. 2, 1992, pages 593 - 596
- RIECHMANN ET AL., *NATURE*, vol. 332, 1988, pages 323 - 327
- VERHOEYEN ET AL., *SCIENCE*, vol. 239, 1988, pages 1534 - 1536
- SIMS ET AL., *J. IMMUNOL.*, vol. 151, 1993, pages 2296
- CHOTHIA ET AL., *J. MOL. BIOL.*, vol. 196, 1987, pages 901
- CARTER ET AL., *PROC. NATL. ACAD. SCI. USA*, vol. 89, 1992, pages 4285
- PRESTA ET AL., *J. IMMUNOL.*, vol. 151, 1993, pages 2623
- JAKOBOVITS ET AL., *PROC. NATL. ACAD. SCI. USA*, vol. 90, 1993, pages 2551
- JAKOBOVITS ET AL., *NATURE*, vol. 362, 1993, pages 255 - 258
- BRUGGERMANN ET AL., *YEAR IN IMMUNOL.*, vol. 7, 1993, pages 33
- MCCAFFERTY ET AL., *NATURE*, vol. 348, 1990, pages 552 - 553
- JOHNSON, KEVIN S; CHISWELL, DAVID J., *CURRENT OPINION IN STRUCTURAL BIOLOGY*, vol. 3, 1993, pages 564 - 571
- GRIFFITH ET AL., *EMBO J.*, vol. 12, 1993, pages 725 - 734
- KOZBER, *J IMMUNOL*, vol. 133, 1984, pages 3001
- BRODEUR ET AL.: "Monoclonal Antibody Production Techniques and Applications", 1987, MARCEL DEKKER, INC, pages: 51 - 63
- BOERNER, J. *IMMUNOL.*, vol. 147, 1991, pages 86 - 95
- HOLLINGER ET AL., *PROC. NATL. ACAD. SCI. USA*, vol. 90, 1993, pages 6444 - 6448
- MILSTEIN; CUELLO, *NATURE*, vol. 305, 1983, pages 537 - 539
- TRAUNECKER ET AL., *EMBO J.*, vol. 10, 1991, pages 3655 - 3659
- TUTT ET AL., *J. IMMUNOL*, vol. 147, 1991, pages 60
- HART ET AL., *J BIOL. CHEM*, vol. 269, 1994, pages 12468
- BRISSETTE R ET AL., *CURR OPIN DRUG DISCOV DEVEL*, vol. 9, no. 3, May 2006 (2006-05-01), pages 363 - 9
- FRANK ET AL., *CANCER RESEARCH*, 2005
- FRAKER ET AL., *BIOCHEM. BIOPHYS. RES. COMMUN*, vol. 80, 1978, pages 49 - 57
- "Monoclonal Antibodies in Immunoscintigraphy", 1989, CHATAL, CRC PRESS
- VITETTA ET AL., *SCIENCE*, vol. 238, 1987, pages 1098
- CHARI ET AL., *CANCER RESEARCH*, vol. 52, 1992, pages 127 - 131
- WHITTLE ET AL., *PROTEIN ENG.*, vol. 1, 1987, pages 499
- BURTON ET AL., *SCIENCE*, vol. 266, 1994, pages 1024 - 1027
- MARASCO ET AL., *PROC. NATL. ACAD. SCI. (USA)*, vol. 90, 1993, pages 7889
- DUAN ET AL., *PROC. NATL. ACAD. SCI. (USA)*, vol. 91, 1994, pages 5075 - 5079

- HUSE ET AL., SCIENCE, vol. 246, 1989, pages 1275
- MARKS ET AL., J MOL. BIOL., vol. 222, 1991, pages 581
- BARBAS ET AL., PROC. NATL. ACAD SCI. (USA, vol. 88, no. 7978, pages 991
- SMITH ET AL., SCIENCE, vol. 228, 1985, pages 1315 - 1317
- KANG ET AL.: "Methods: A Companion to Methods in Enzymology", vol. 2, 1991, ACADEMIC PRESS, pages: 111 - 118
- BARBAS ET AL., PROC. NATL. ACAD SCI. (USA, vol. 88, 1991, pages 7978 - 7982
- ROBERTS ET AL., PROC. NATL. ACAD. SCI. (USA, vol. 89, 1992, pages 2429 - 2433
- LEI ET AL., NATURE, vol. 381, 1988, pages 543 - 546
- BETTER ET AL., SCIENCE, vol. 240, 1988, pages 1041 - 1043
- SASTRY ET AL., PROC. NATL. ACAD SCI (U\$A, vol. 86, 1989, pages 5728 - 5732
- MULLINAX ET AL., PROC. NATL. ACAD SCI. (USA, vol. 87, 1990, pages 8095 - 8099
- NEIDHARD, F.C.: "Escherichia coli and Salmonella Typhimurium", vol. 1, 1987, AMERICAN SOCIETY FOR MICROBIOLOGY, pages: 56 - 69
- SHINE ET AL., NATURE, vol. 254, 1975, pages 34
- ROBERTS ET AL., PROC. NATL. ACAD SCI. (USA, vol. 76, 1979, pages 760
- ROBERTS ET AL., PROC. NATL. ACAD SCI. (USA, vol. 76, 1979, pages 5596
- GUARENTE ET AL., SCIENCE, vol. 209, 1980, pages 1428
- GUARENTE ET AL., CELL, vol. 20, 1980, pages 543
- GOLD ET AL., ANNU. REV. MICROBIOL, vol. 35, 1981, pages 365
- TANIGUCHI ET AL., J. MOL. BIOL, vol. 118, 1978, pages 533
- SAMBROOK ET AL.: "Molecular Cloning: A Laboratory Manual, 2nd edition,", 1989, COLD SPRING HARBOR LABORATORY PRESS
- GRAHAM ET AL., J. GEN VIROL, vol. 36, 1977, pages 59
- URLAUB ET AL., PROC. NATL. ACAD. SCI. USA, vol. 77, 1980, pages 4216
- TM4, MATHER, BIOL. REPROD, vol. 23, 1980, pages 243 - 251
- MATHER ET AL., ANNALS N.Y. ACAD. SCI., vol. 383, 1982, pages 44 - 68
- HAM ET AL., METH. ENZ., vol. 58, 1979, pages 44
- BARNES ET AL., BIOCHEM, vol. 102, 1980, pages 255
- VERMA N.K. ET AL., J. CLIN. PHARM. THER., vol. 28, no. 5, 2004, pages 395 - 404
- MELLO C.C. ET AL., NATURE, vol. 431, no. 7006, 2004, pages 338 - 42
- DYKXHOOM D.M. ET AL., NAT. REV. MOL. CELL BIOL, vol. 4, no. 6, 2003, pages 457 - 67
- GENNARO: "Remington's Pharmaceutical Sciences, 18th ed.,", 1990
- SCIARRA; CUTIE: "Remington's Pharmaceutical Sciences, 18th edition,", 1990, article "Aerosols", pages: 1694 - 1712
- H.S. SAWHNEY; C.P. PATHAK; J.A. HUBELL, MACROMOLECULES, vol. 26, 1993, pages 581 - 587
- OSOL, A.: "Remington's Pharmaceutical Sciences 16th edition,", 1980
- KALDERON, D.; ROBERTS, B. L.; RICHARDSON, W. D.; SMITH, A. E. A: "short amino acid sequence able to specify nuclear location", CELL, vol. 39, 1984, pages 499 - 509, XP023912340, DOI: doi:10.1016/0092-8674(84)90457-4
- FRANK, N. Y. ET AL.: "ABCBS-mediated doxorubicin transport and chemoresistance in human malignant melanoma", CANCER RES, vol. 65, 2005, pages 4320 - 33
- FRANK, N. Y. ET AL.: "et al. Regulation of progenitor cell fusion by ABCB5 P-glycoprotein, a novel human ATP-binding cassette transporter", J BIOL CHEM, vol. 278, 2003, pages 47156 - 65, XP002496926, DOI: doi:10.1074/jbc.M308700200
- FRANK, N. Y ET AL.: "Regulation of progenitor cell fusion by ABCB5 P-glycoprotein, a novel human ATP-binding cassette transporter", J BIOL CHEM, vol. 278, 2003, pages 47156 - 65, XP002496926, DOI: doi:10.1074/jbc.M308700200
- FRANK, N. Y. ET AL.: "ABCBS-mediated doxorubicin transport and chemoresistance in human malignant melanoma", CANCER RES, vol. 6S, 2005, pages 4320 - 33
- E. A. KABAT ET AL., SEQUENCES OF PROTEINS OF IMMUNOLOGICAL INTEREST, 1991

Citation (search report)

- [X] FRANK NATASHA Y ET AL: "ABCB5-mediated doxorubicin transport and chemoresistance in human malignant melanoma", CANCER RESEARCH, AMERICAN ASSOCIATION FOR CANCER RESEARCH, BALTIMORE, MD, US, vol. 65, no. 10, 1 May 2005 (2005-05-01), pages 4320 - 4333, XP002456050, ISSN: 0008-5472
- [X] FRANK NATASHA Y ET AL: "Regulation of progenitor cell fusion by ABCB5 P-glycoprotein, a novel human ATP-binding cassette transporter.", THE JOURNAL OF BIOLOGICAL CHEMISTRY 21 NOV 2003, vol. 278, no. 47, 21 November 2003 (2003-11-21), pages 47156 - 47165, XP002496926, ISSN: 0021-9258
- [T] SCHATTON TOBIAS ET AL: "Identification of cells initiating human melanomas.", NATURE 17 JAN 2008, vol. 451, no. 7176, 17 January 2008 (2008-01-17), pages 345 - 349, XP002496927, ISSN: 1476-4687

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR

DOCDB simple family (publication)

WO 2008127656 A1 20081023; AU 2008239633 A1 20081023; AU 2008239633 B2 20140529; CA 2718573 A1 20081023; CA 2718573 C 20200714; CY 1116823 T1 20170315; CY 1121046 T1 20191211; DK 2155248 T3 20150914; DK 2644205 T3 20180924; EP 2155248 A1 20100224; EP 2155248 B1 20150610; EP 2644205 A1 20131002; EP 2644205 B1 20180613; EP 3431103 A1 20190123; EP 3431103 B1 20210728; ES 2547016 T3 20150930; ES 2687270 T3 20181024; HR P20150934 T1 20151106; HR P20181385 T1 20181019; HU E027593 T2 20161128; HU E039385 T2 20181228; JP 2010534191 A 20101104; JP 2014133770 A 20140724; JP 2016188248 A 20161104; JP 2018052979 A 20180405; JP 5889527 B2 20160322; JP 6268237 B2 20180124; JP 6530044 B2 20190612; LT 2644205 T 20181210; PL 2155248 T3 20151231; PL 2644205 T3 20181130; PT 2155248 E 20151023; PT 2644205 T 20181019; SI 2155248 T1 20151231; SI 2644205 T1 20181130; US 2009117117 A1 20090507; US 2011165149 A1 20110707; US 2014302031 A1 20141009; US 2016136297 A1 20160519; US 7928202 B2 20110419; US 8697072 B2 20140415; US 9266946 B2 20160223; US 9855342 B2 20180102

DOCDB simple family (application)

US 2008004715 W 20080411; AU 2008239633 A 20080411; CA 2718573 A 20080411; CY 151100784 T 20150910; CY 181100944 T 20180912; DK 08742787 T 20080411; DK 13163810 T 20080411; EP 08742787 A 20080411; EP 13163810 A 20080411; EP 18177392 A 20080411; ES 08742787 T 20080411; ES 13163810 T 20080411; HR P20150934 T 20150907; HR P20181385 T 20180828; HU E08742787 A 20080411; HU E13163810 A 20080411; JP 2010503072 A 20080411; JP 2014090150 A 20140424; JP 2016153402 A 20160804; JP 2017247931 A 20171225; LT 13163810 T 20080411; PL 08742787 T 20080411; PL 13163810 T 20080411; PT 08742787 T 20080411; PT 13163810 T 20080411; SI 200831496 T 20080411; SI 200831993 T 20080411; US 10142808 A 20080411; US 201113044854 A 20110310; US 201414251932 A 20140414; US 201615005364 A 20160125